Q&A

Life Expectancy of Metal Roofs

Q. *We're working on a 120-year-old house that still has its original standing-seam metal roof. A roof painter told the owner that this roof has 50 years of useful life left. Can a metal roof really last 170 years?*

A. *Rob Haddock of the Metal Roof Advisory Council responds:* If this roof is 120 years old, that would mean it was built around 1880. In those days, the options were copper, lead, tin-coated iron, and terne-coated steel. Tin-coated malleable iron was disappearing at the time. Copper and terne rolled roofs were very popular during that vintage — terne more so because it was less expensive.

Terne is an alloy of lead and tin that provides excellent corrosion protection for steel. It was recently taken off the market due to the politics of lead, although no specific health threat was ever established. The replacement material, manufactured by Follansbee Steel, is a zinc-tin alloy called Terne II (800/624-6906, www.follansbeeroofing.com/products/terne2).

Regarding this particular roof, it would not surprise me to see a copper, lead, or lead-coated copper roof last 150 or even 170 years. There are many examples in Europe, and a few here in the States, that are even older. But since you mention a roof painter, it seems likely that this is a terne roof, not copper or lead. Lead and copper roofs are rarely painted; terne steel roofs *must* be cleaned and painted periodically.

If they are kept up that way, however, terne roofs also can last a very long time. A lot of terne roofs are a good 100 years old. To say a terne roof would last 170 years might be optimistic, but it's not out of the question if the roof has been well maintained over the years — especially if it's located in a benign climate like that in some of the drier western states.

Recognize too that the modern materials you might replace this historic roof with would likely not be as durable as the original material. The more popular metals used today are coated carbon steel and aluminum. You can generally expect 40 to 60 years out of those if they are installed properly. However, no painted finish on those materials will last that long. Today's premium factory paint options will go 35 years at best.

Stripping an EPDM Roof

Q. *I have to strip off an EPDM roof. Is there anything special I need to know?*

A. *Roofer Joseph Bublick responds:* No, there's nothing special about tearing off EPDM roofing. You use the same procedure you would use with any other roof. In fact, EPDM is probably the simplest roof covering to remove, because you can easily cut it with a knife and just pull the material up.

Just like with any other roof system, though, there's no telling what you'll find when you look under it. If there's a substrate applied under the EPDM — typically, we apply a rigid insulation board with a tough protective skin — you'll want to strip that off, too, so you can inspect the structural deck. The substrate is usually screwed down, so you'll have to either back those screws out or cut them off.

Flickering Lights

Q. *I'm doing some wood siding repairs on a house, and every time I hit the trigger on my chop saw, the lights in the house flicker. The power company says the problem is with the house not their lines. But the lights in the house across the street flicker, too. A friend suggested that there could be a bad connection on the neutral. How can I determine what the problem is, and get the power company to fix it if it's their responsibility?*

A. *Master electrician Rex Cauldwell responds:* This has to be a utility problem: low voltage or too great a load for the available voltage. There is no other way your chop saw would be able to affect the house across the street. Probably both houses are working on the same transformer, and the transformer is underpowered. If you are on different transformers, then the utility really has a problem. It means that their high-voltage line is overextended — in other words, there are too many homes on that particular tap.

The "bad neutral" theory doesn't add up. A service entrance connection (SEC) neutral problem gives a whole set of different problems. Every house has two energized lines into the house and a neutral that either hot line can use. When an SEC neutral goes bad, one of the hot legs to the house goes high, and the other leg goes low. In the house, that will likely damage anything connected to the leg that goes high.

That's not to say that there isn't also a problem in the house that is making things worse. For example, if a house is underpowered, that would tend to make the lights dim more easily to begin with.

The homeowners should have an electrician check out the utility problem and verify it; that way the utility is hearing from a professional that it is their problem. Here's how I would troubleshoot:

1. With a high-quality digital volt-ohm meter (VOM), measure the voltage going into the service panel under load and nonload. Load one leg, then the

other, then both. The voltage should not change more than a few volts. If it does, the transformer is too small.

2. Make the same measurements with someone across the street operating the chop saw. If the voltage goes down (and we know it will), the problem is outside the house.

3. Make similar measurements at the utility meter. If the voltage drop occurs before going into the house, we know the problem is outside the house.

4. Look up at the transformer and read the kilovolt-amp (KVA) rating, which is often painted on the side. A 200-amp house at 240 volts needs a 45-KVA minimum; with two houses you need twice that. Odds are, they are running both houses off one 45-KVA transformer.

I'm confident that the main problem will turn out to be the power company running too low a voltage on the primary and overextending the tap line. I've seen this more times than I can count. If the utility won't cooperate, the house owner should write the state utility board, with a copy going to the utility. Normally the utility has 30 days to respond to the board.

Drywall Disposal On Site

Q. *My excavation contractor offered to bury my scrap drywall on site, but I've heard buried gypsum can create a harmful gas. I've also read that it's okay to bury small amounts if you disperse it. Is it okay to bury drywall on site at all, and if so, what's the proper way to do it?*

A. *Alex Wilson, editor of* Environmental Building News *in Brattleboro, Vt., responds:* You're right that it's not a good idea to simply bury scrap drywall in a hole. Under oxygen-depleted conditions, such as in a landfill or several feet underground in a covered hole, the gypsum (calcium sulfate) in drywall can decompose to release the noxious gas hydrogen sulfide. This gas is hazardous at high concentrations and an odor problem even at very low levels. Problems have sometimes arisen when builders have buried the scrap drywall from a house. The rotten egg smell is not at all popular with homeowners.

However, scrap drywall can safely be used as a soil amendment in the oxygen-rich, active top few inches of soil if it is properly pulverized and applied. Drywall is composed of paper facings and gypsum. Gypsum is often used as a fertilizer, adding both calcium and sulfur. Along with the benefits of the gypsum, the unbleached paper adds tilth to soil. The following recommendations should help you avoid problems and use drywall scrap properly as a soil amendment:

- Only new (unpainted) drywall scrap should be used as a soil amendment.

- The drywall should be pulverized to allow rapid disintegration; no pieces should be larger than 1/2 inch in diameter. Some builders have used a brush chipper successfully to pulverize the drywall (wear a dust mask!).

- Pulverized drywall can be spread on the soil surface or tilled into the top layer of soil (no more than a few inches deep).

- The pulverized drywall should be spread evenly over the entire lot or area being seeded.

- Pulverized gypsum may be added at rates of up to 1 pound per square foot (22 tons per acre), though spreading it much more thinly is generally recommended. Gypsum's effect on soil quality varies depending on the type of soil, so it's best to ask your county agricultural extension agent for guidance on how much added gypsum is appropriate for your local soil.

- Pulverized drywall should be applied to soil only in areas with adequate drainage and aeration (no standing water or anaerobic conditions).

- Finally, you should find out if there are specific regulations in your area that address the disposal of drywall scrap in this manner, or if any permit is required for this practice.

For more on the use of drywall scrap as a soil amendment, visit the Gypsum Association website: www.gypsum.org/topical.html.

Curing a Sagging Entry

Q. *I just replaced the insulating steel and fiberglass door in an entry door assembly with dual sidelights. The new door strikes the jamb near the top on closing, and the clearance along the top is uneven. I tried driving a couple of long screws through the top hinge leaf to pull it over, but the mulled jamb assembly isn't stiff enough to resist the weight of the door. There's no framing behind the jamb, just the foam core of the flanking sidelight. How can I pull this door into alignment?*

A. JLC *editor Dave Holbrook responds:* I had the same problem recently. The weight of an entry door is mostly concentrated on the topmost hinge, which calls for beefy hinges and an unyielding jamb. Prehung door manufacturers usually leave one or two screws out of the top leaf and ship a couple of 3- to 4-inch-long screws with the door, expecting you to drive them through the jamb into the framing. When your closest framing is a foot or more away from the hinge because of the foam-core sidelight, you've got a problem. The hardware stores don't seem to carry #10 wood screws 16 inches long.

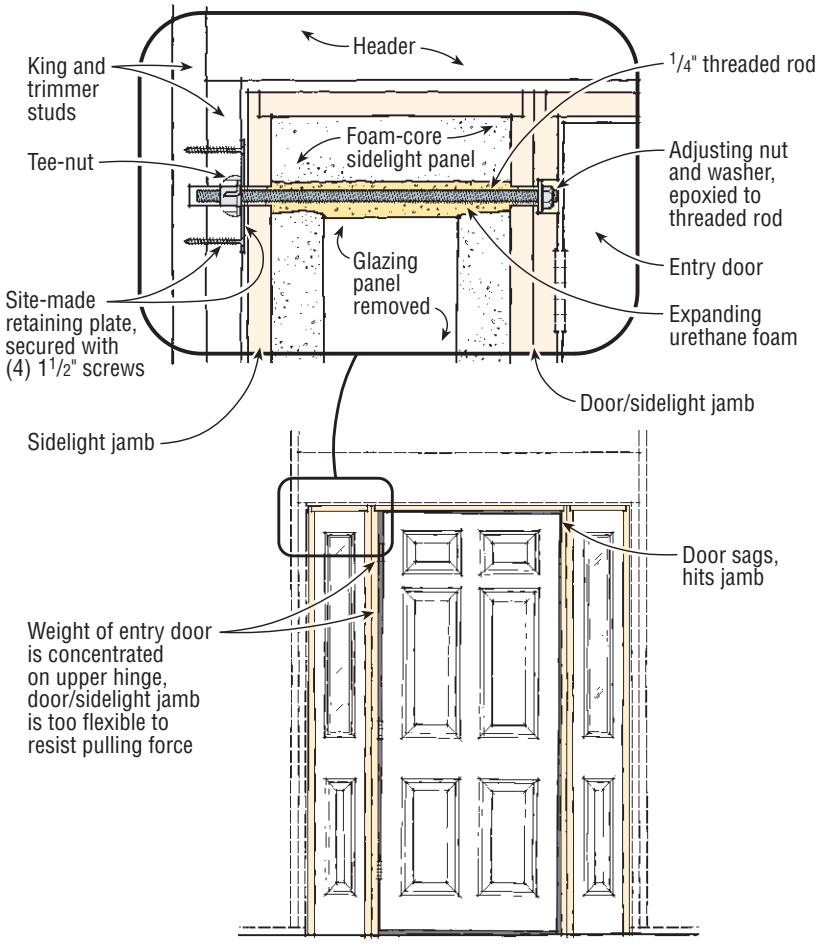
I solved the problem with a length of 1/4-inch threaded rod and a tee-nut connector secured in the framing. Installing this rig was a job, though: I had to pull the entire door assembly to install the connector. But when I

discovered that one sidelight jamb was rotted, I decided it was worth the hassle. I pulled the whole door frame out, replaced the bad jamb, and proceeded. I left the sidelights loose in the frame and took the door off the hinges to make the job easier.

Tacking the frame back in the opening, I drilled a 1-inch-diameter hole in the hinge jamb, directly above the hinge, high enough to clear the sidelight glazing and just deep enough to recess the rod's nut and washer. Then, using an extra-long 1/4-inch-diameter twist bit, I drilled a hole through the center of that counterbore and through the sidelight. The bit bottomed out a little shy of the far jamb, but it gave me enough of a pilot hole in the sidelight to let me pull the sidelight and complete the hole from the back side. The bit didn't emerge exactly opposite the starting point, but side pressure and plunging action on the drill bit reamed the foam sufficiently to realign the hole.

I put the sidelight back in the jamb and inserted the threaded rod to mark the jamb for drilling. A light hammer tap on the nut-capped rod did the trick; I pulled the sidelight again, drilled through the jamb into the framing, and once again pulled the entire jamb assembly out of the rough opening. I enlarged the hole in the framing to accommodate the tee-nut connector's shank, drilling deep enough to

Fixing a Sagging Steel Door



Threaded rod, drilled clear through a flanking sidelight into the framing just high enough to clear the glazing, counters the weight of an entry door at the topmost hinge and prevents it from sagging. A site-made steel retaining plate prevents the tee-nut connector from pulling out of the framing under tension. The adjusting nut is recessed in the hinge jamb, just above the hinge.

allow the rod to pass through with room for adjustment. Although barbs on the flange of the tee nut prevent it from twisting, they don't resist pullout, so I capped the nut with a steel mending plate, center-drilled for clearance and screwed to the framing with four $1\frac{1}{2}$-inch screws.

I permanently reinstalled the door frame and inserted the threaded rod, finger-tightening it in the tee nut. After sliding a washer on and sending a nut after it, I dabbed some 5-minute, 2-part epoxy adhesive on the threads, nut, and washer to fuse them together, then cut off the excess rod with a hacksaw, flush with the nut and hence the jamb. After letting the epoxy cure, I gave the nut a few cranks with a socket wrench to snug it up.

I hung the door on the hinges, closed it, and checked the clearance. Initially, it hit the striker jamb, but a few turns to the nut fine-tuned the clearance and alignment to perfection. I gave myself a pat on the back.

Because my crude sidelight drilling had removed enough foam between the sidelight's steel facings to create a potentially sweaty, cold-weather condensation flash point above the glazing panel, I removed the glazing from the sidelight. (The glazing panels in the sidelights and door consist of a pair of matching plastic frames that screw together from the interior side, sandwiching the glass panel and the panel cutout in compression. A couple of beads of silicone caulk around the outside perimeter of the glass and the cutout seal the deal.) Sure enough, there wasn't much polystyrene left around the rod. I hosed the cavity with expanding urethane foam, let it cure, cut away the excess, and reinstalled the glass.

Got a question?

Send it to Q&A, ***JLC***, 186 Allen Brook Ln., Williston, VT 05495; or e-mail to jlc-editorial@hanley-wood.com.